

WHAT IS CLAIMED IS:

1. An image pickup apparatus comprising:  
an image pickup element having a color coding filter;  
spatial phase synchronization means for synchronizing horizontal and vertical spatial phases based on output from each line in the image pickup element; and  
synthesis means for generating a synthesized signal based on a signal whose horizontal and vertical spatial phases are synchronized in the spatial phase synchronization means, wherein a signal from the synthesis means is subject to chromaticness processing.
2. An image pickup apparatus according to claim 1,  
wherein the color coding filter is a complementary mosaic color coding filter.
3. An image pickup apparatus according to claim 2,  
wherein the complementary mosaic color coding filter is based on a repetition of two pixels horizontally by four lines vertically, and  
wherein the filter comprises:  
a first line which is an alternate repetition of Cy (cyan) and Ye (yellow);  
a second line which is an alternate repetition of G (green) and Mg (magenta);  
a third line which is an alternate repetition of Cy and Ye; and  
a fourth line which is an alternate repetition of Mg and G.
4. An image pickup apparatus according to claim 2,  
wherein the synthesis means generates new signals S1r, S2r, S1b, and S2b by

performing the following operations:

$$S1r = C_y + G, \quad S2r = Y_e + Mg$$

based on Cy (cyan), Ye (yellow), G (green), and Mg (magenta) of each pixel data in a signal whose horizontal and vertical spatial phases are synchronized in the spatial phase synchronization means.

5. An image pickup apparatus according to claim 1,  
wherein the image pickup element is read on a frame basis by independently  
scanning odd-numbered and even-numbered lines.

6. An image pickup method for an image pickup apparatus provided with an image pickup element having a color coding filter,

wherein the image pickup method comprises:

the step of allowing spatial phase synchronization means to synchronize horizontal and vertical spatial phases based on output from each line in the image pickup element;

the step of allowing synthesis means to create a synthesized signal based on a signal whose horizontal and vertical spatial phases are synchronized in the spatial phase synchronization means; and

the step of allowing synthesis means to create a synthesized signal based on a signal whose horizontal and vertical spatial phases are synchronized in the spatial phase synchronization means; and

the step of performing chromaticness processing for a signal from the synthesis means.

7. An image pickup method according to claim 6,  
wherein the color coding filter is a complementary mosaic color coding filter.

8. An image pickup method according to claim 7,  
wherein the complementary mosaic color coding filter is based on a repetition of two  
pixels horizontally by four lines vertically, and

wherein the filter comprises:

a first line which is an alternate repetition of Cy (cyan) and Ye (yellow);

a second line which is an alternate repetition of G (green) and Mg (magenta);

a third line which is an alternate repetition of Cy and Ye; and

a fourth line which is an alternate repetition of Mg and G.

9. An image pickup method according to claim 7,

wherein the synthesis means generates new signals S1r, S2r, S1b, and S2b by  
performing the following operations:

$$S1r = Cy + G, \quad S2r = Ye + Mg$$

$$S1b = Cy + Mg, \quad S2b = Ye + G$$

based on Cy (cyan), Ye (yellow), G (green), and Mg (magenta) of each pixel  
data in a signal whose horizontal and vertical spatial phases are synchronized in the  
spatial phase synchronization means.

10. An image pickup method according to claim 6,

wherein the image pickup element is read on a frame basis by independently  
scanning odd-numbered and even-numbered lines.